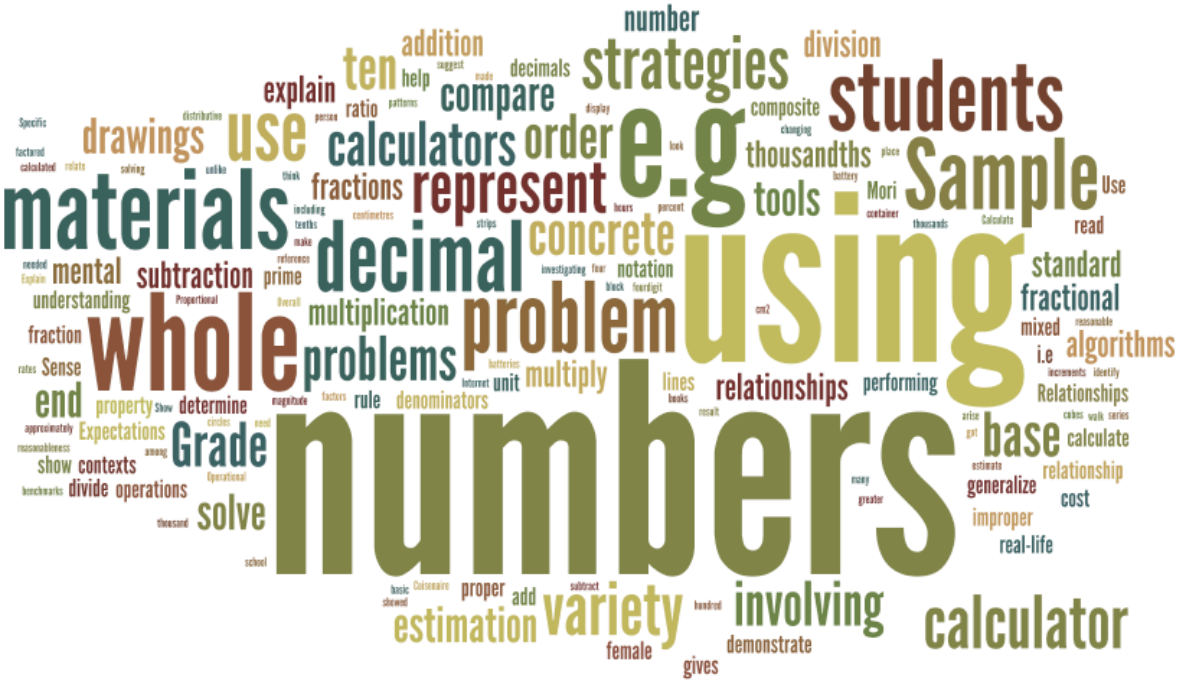
Consolidation of Grade 6 EQAO Questions



Number Sense and Numeration

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GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectations

NV1	• Read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers
NV2	• Solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies
NV3	• Demonstrate an understanding of relationships involving percent, ratio, and unit rate

Year	NV1	NV2	NV3
Spring 2006	MC17 MC19	MC4 MC5 MC25 OR29	MC20 OR8
Spring 2007	MC18 MC19 OR29	MC5 MC34	MC6 MC35 OR8
Spring 2008	MC1 MC2 OR10	MC31 MC32	MC22 MC23 OR27
Spring 2009	MC1 MC33 OR29	MC2 MC31 MC32 OR28	MC22
Spring 2010	MC1 MC32 OR8	MC5 MC23	MC31 MC34 OR28
Spring 2011	MC17 MC20 OR8	MC5 MC33 MC36 OR7	MC35

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Year	Knowledge & Understanding	Problem Solving (Thinking)	Application
Spring 2009	MC1 MC32	MC22 MC23 OR28 OR29	MC2 MC31
Spring 2010	MC1 MC23	MC32 MC34 OR28	MC5 MC31 OR8
Spring 2011	MC17 MC35	MC5 MC20 OR7	MC33 MC36 OR8

Continuum of Expectations: Number Sense & Numeration

Quantity Relationships	
Grade 5	**Grade 6**
Overall Expectation	
• Read, represent, compare, and order whole numbers to 100 000, decimal numbers to hundredths, proper and improper fractions, and mixed numbers	• Read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers
Specific Expectations	
• Represent, compare, and order whole numbers and decimal numbers from 0.01to 100 000, using a variety of tools	• Represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools
• Demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies	• Demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies
• Solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 100 000	• Solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000
• Read and print in words whole numbers to ten thousand, using meaningful contexts	• Read and print in words whole numbers to one hundred thousand, using meaningful contexts
• Represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools	• Represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools
• Demonstrate and explain the concept of equivalent fractions, using concrete materials	
• Round decimal numbers to the nearest tenth, in problems arising from real-life situations	
• Demonstrate and explain equivalent representations of a decimal number, using concrete materials and drawings	
• Read and write money amounts to $1000	
	• Estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100%
	• Identify composite numbers and prime numbers, and explain the relationship between them (i.e., any composite number can be factored into prime factors)

Counting	
Grade 5	**Grade 6**
Overall Expectation	
• Demonstrate an understanding of magnitude by counting forward and backwards by 0.01	
Specific Expectations	
• Count forward by hundredths from any decimal number expressed to two decimal places, using concrete materials and number lines	

Operational Sense	
Grade 5	**Grade 6**
Overall Expectation	
• Solve problems involving the multiplication and division of multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to hundredths, using a variety of strategies	• Solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies
Specific Expectations	
• Solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies	• Use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers
	• Solve problems involving the multiplication and division of whole numbers (four digit by two-digit), using a variety of tools and strategies
• Multiply two-digit whole numbers by two-digit whole numbers, using estimation, student-generated algorithms, and standard algorithms	• Multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies
• Divide three-digit whole numbers by one-digit whole numbers, using concrete materials, estimation, student-generated algorithms, and standard algorithms	
• Use estimation when solving problems involving the addition, subtraction, multiplication, and division of whole numbers, to help judge the reasonableness of a solution	• Use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution
• Add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms	• Add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms, and calculators
• Multiply decimal numbers by 10, 100, 1000, and 10 000, and divide decimal numbers by 10 and 100, using mental strategies	• Multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies
	• Multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators
	• Explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations

Proportional Relationships	
Grade 5	**Grade 6**
Overall Expectation	
• Demonstrate an understanding of proportional reasoning by investigating whole-number rates	• Demonstrate an understanding of relationships involving percent, ratio, and unit rate
Specific Expectations	
• Describe multiplicative relationships between quantities by using simple fractions and decimals	
• Determine and explain, through investigation using concrete materials, drawings, and calculators, the relationship between fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100) and their equivalent decimal forms	• Determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents
• Demonstrate an understanding of simple multiplicative relationships involving whole-number rates, through investigation using concrete materials and drawings	• Represent relationships using unit rates
	• Represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2006

17 Which of the following is a factor of 70 but is not a prime number?

a 10 *

b 7

c 4

d 2

19 Which set is in order from least to greatest?

a 1.153, 1.062, 0.13, 0.054

b 0.13, 0.054, 1.162, 1.153

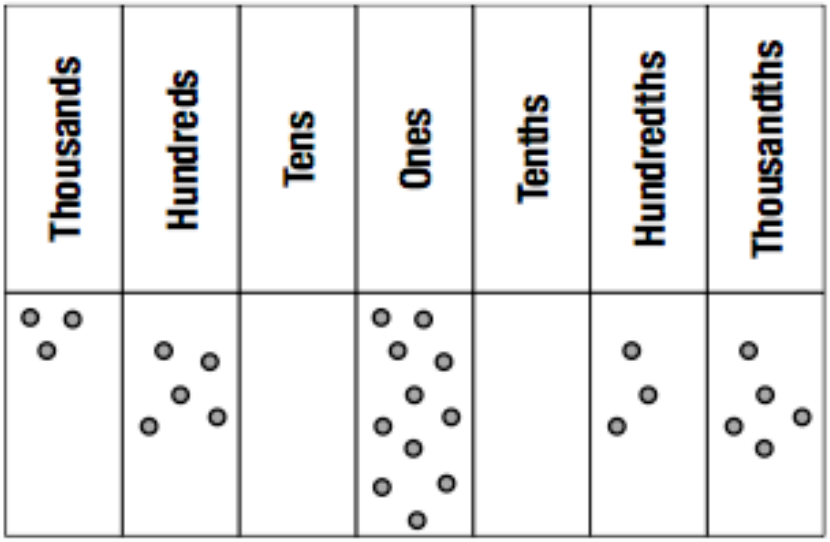
c 0.054, 0.13, 1.153, 1.062

d 0.054, 0.13, 1.062, 1.153 *

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2007

18 What number is modelled in the place-value chart below?



F 3529.035

G 3529.35

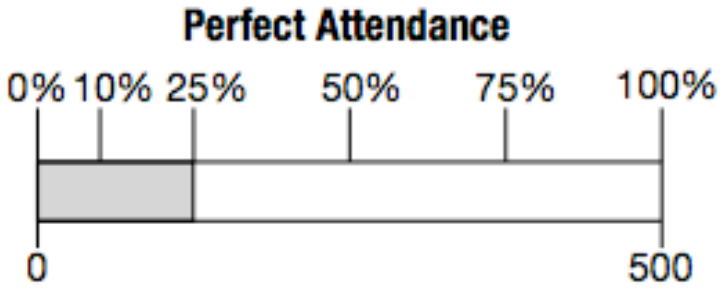
H 3511.035

J 35 011.35

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2007

19 A school has 500 students. The shaded portion below shows the students with perfect attendance.



Which of the following is closest to the number of students with perfect attendance?

A 100

B 200

C 300

D 400

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2007

29 Write the following fractions in order from least to greatest.

$$\frac{3}{2}, \frac{2}{3}, \frac{1}{4}, \frac{4}{5}$$

Explain your thinking.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2008

1 Which is the correct way to write the number 90 090 in words?

a nine hundred ninety

b nine thousand ninety

c ninety thousand ninety

d nine hundred thousand ninety

2 Joseph finishes a swim race in 73.365 seconds. Joseph knows the following about his friend's time for the same race.

- The digit in the hundredths column is 3 more than Joseph's.
- The digit in the ones column is 2 less than Joseph's.

In what time does Joseph's friend swim the race?

a 53.368

b 53.395

c 71.368

d 71.395

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2008

10 Each of 130 students sign up for one of five activities. The table below shows some of the results.

Activity Sign-Up

Activity	Number of Students
Soccer	38
Chess	13
Band	33
Drama	
Photography	14

Susan estimates that 25% of the students signed up for drama. Jessica estimates that 50% of the students signed up for drama.

Using the benchmarks of 10%, 25%, 50%, 75% or 100%, justify which estimate is more appropriate.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2009

1 Which of the following lists shows these numbers in order from least to greatest?

1.250, 12.50, 0.125, 125.0

a 0.125, 12.50, 1.250, 125.0

b 125.0, 12.50, 1.250, 0.125

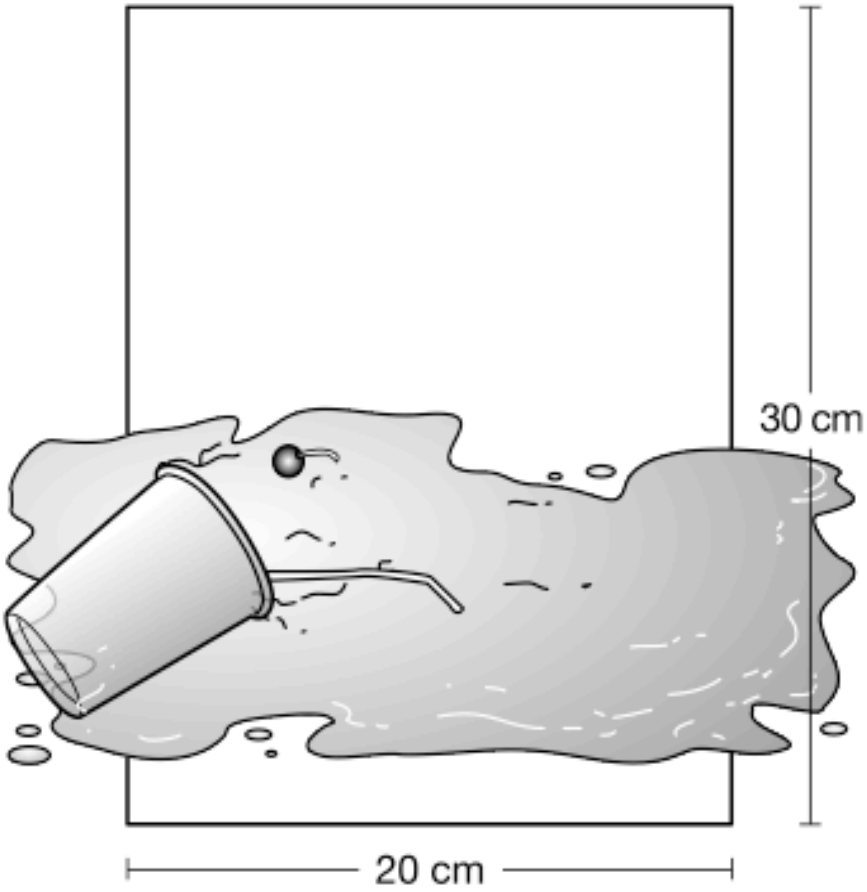
c 12.50, 125.0, 0.125, 1.250

d 0.125, 1.250, 12.50, 125.0

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2009

33 Samantha spills a milkshake on a rectangular piece of paper as shown below.



Which of the following **best** approximates the area of the entire spill?

a 100 cm^2

b 300 cm^2

c 400 cm^2

d 600 cm^2

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2009

29 Consider the fractions $\frac{3}{2}$ and $1\frac{3}{4}$.

- Which of these fractions is larger?

Justify your answer.

The larger fraction is _____.

- Find a fraction between $\frac{3}{2}$ and $1\frac{3}{4}$.

Justify your answer.

A fraction between $\frac{3}{2}$ and $1\frac{3}{4}$ is _____.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2010

1 Zach lives in a city with a population of ninety-two thousand forty-seven. Which number below represents the population of this city?

a 9247

b 92 470

c 92 047

d 920 047

32 Mr. Price's class collects a total of 1943 pennies over a period of 4 weeks. Samantha brings 125 pennies each week.

Approximately what percent of the total number of pennies collected does Samantha bring?

a 10%

b 25%

c 50%

d 75%

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2010

8 Consider the fractions shown below.

$$\frac{3}{4}, \frac{18}{25}, \frac{15}{20}, \frac{75}{100}$$

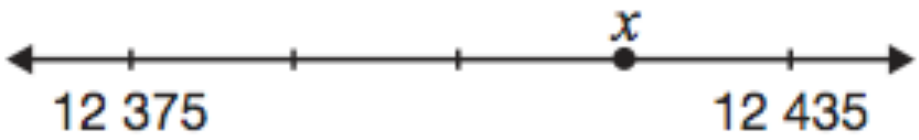
Which fractions represent equal values?

Justify your answer.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2011

17 Consider the number line below.



What value does x represent?

a 12 415

b 12 420

c 12 425

d 12 430

20 A company made 1 000 000 balloons last month and packaged them in bags containing 100 balloons. Each bag of balloons sells for $2.

How much money will the company receive if the company sells all of the bags?

a $200

b $2000

c $20 000

d $200 000

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #1
Spring 2011

8 Consider how 30 is written below as the product of prime numbers.

$$30 = 2 \times 3 \times 5$$

Write 168 as the product of prime numbers.

Show your work.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2006

4 Germaine buys one hamburger, one sandwich and two fruit salads.

Menu

Item	Amount
Hamburger	$3.50
Sandwich	$2.75
Fruit Salad	$1.60
Frozen Yogourt	$3.00

How much change should she receive from $20.00?

a $9.15

b $9.45

c $10.55 *

d $12.15

5 Which number, when placed in the box, makes the following number sentence true?

$15 - 6 \times 2 + 18 \div 3 = \square$

a 7

b 9 *

c 12

d 24

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2006

25 Cary needs to set up 144 chairs in rows. Each row must have an equal number of chairs. Which of the following could be the method Cary uses to set up the chairs?

a 14 rows of 10 chairs

b 12 rows of 14 chairs

c 6 rows of 21 chairs

d 8 rows of 18 chairs *

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2006

29 The rectangular ceiling of a room has an area of 36 m^2. The ceiling needs 3 coats of paint. Each can of paint covers 25 m^2.

About how many cans of paint are needed to paint the ceiling?

Explain your thinking.

____ cans of paint are needed.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2007

5 Four students in Ms. Haswell's class simplify the expression below.

$$6 + 21 \div 7 - 4 \times 2 + 5$$

The first step of each of the four students is shown in the table below.

Simplifying the Expression

Student	First Step
Zoe	6 + 21
Liam	7 – 4
Dennis	21 ÷ 7
Deborah	2 + 5

Which student performs a first step that is correct?

A Zoe

B Liam

C Dennis

D Deborah

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2007

34 The table below shows the number of pop cans four classes collect. It also shows the number of days each class collects during the recycling program.

Class	Pop Cans Collected	Days Collected
Class 1	7284	40
Class 2	1250	25
Class 3	3742	20
Class 4	2705	50

Which class collects the greatest number of pop cans per day?

F Class 1

G Class 2

H Class 3

J Class 4

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2008

31 Look at the expression below.

$$6 - 2 \times 6 \div 2$$

Which of the following shows the order of operations that can be used to simplify this expression correctly?

a subtraction, division, multiplication

b subtraction, multiplication, division

c division, subtraction, multiplication

d multiplication, division, subtraction

32 A swim team completes the 4-person relay in 210.625 seconds. The times for the first three swimmers are shown below.

Swimmers' Times

Swimmer	Time (in seconds)
1	53.452
2	59.371
3	47.582
4	?

What is the time for swimmer 4?

a 50.220 seconds

b 50.200 seconds

c 50.022 seconds

d 50.020 seconds

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2009

2 Chandra, Brittany, Ben and Daniel buy different sandwiches and salads for lunch. Their choices are shown below.

Prices for Lunch

	Salad	Sandwich
Chandra	$4.48	$3.99
Brittany	$4.48	$4.99
Ben	$3.49	$4.99
Daniel	$3.49	$3.99

Which person should receive about $2.50 change from $10.00?

a Chandra

b Brittany

c Ben

d Daniel

31 It takes Nadeem 22 minutes to walk 1 kilometre. At this rate, approximately how long will it take Nadeem to walk 5 kilometres?

a 1 hour

b 2 hours

c 100 hours

d 110 hours

32 Which expression is equivalent to $128 \div 2$?

a $(120 \div 2) + (8 \div 2)$

b $(120 \div 2) \div (8 \div 2)$

c $(120 + 2) + (8 + 2)$

d $(120 + 2) \div (8 + 2)$

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2009

28 Carmen wants to install a fence. Each section of fence is 2.4 metres long and costs $6.00 per metre. Carmen will need 16 sections of fence. How much change should he receive from $250?

Show your work.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2010

5 A number divided by 58 is close to 30.

Which of the following could be this number?

a 18.43

b 184.3

c 1843

d 18 430

23 Which operation is a correct first step to simplify the expression below?

$$44 + 10 \div 5 - 3 \times 2 + 1$$

a $2 + 1$

b $5 - 3$

c $10 \div 5$

d $44 + 10$

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2011

5 Every week, Danny eats 540 grams of cereal. Over 8 weeks, he finishes a total of 12 boxes of cereal. Each box contains the same amount of cereal.

How many grams of cereal are in each box?

a 360

b 810

c 4320

d 6480

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2011

7 The table below shows the changes in the amount of snow on the ground over 10 days.

Ali estimates that the total change is an increase of 30 cm.

Nadia estimates that the total change is an increase of 25 cm.

Day	Change
1	15 cm new snow
2	7.5 cm new snow
3	no change
4	4.5 cm melted
5	3.5 cm melted
6	4 cm melted
7	no change
8	12 cm new snow
9	2.5 cm new snow
10	8 cm new snow

Which student makes a more accurate estimate?

Circle one: Ali Nadia

Justify your answer.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #2
Spring 2011

33 The amounts of water in two containers are shown in the table below.

Container	Amount of water (L)
A	0.967
B	1.02

What is the difference between the amounts of water in the containers?

a 0.053 L

b 0.865 L

c 1.947 L

d 1.987 L

36 A number is multiplied by 0.01 to get a product of 23.6.

What is the number?

a 0.0236

b 0.236

c 2360

d 23 600

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2006

8 Pie is served at a picnic. Each pie is made up of 6 equal pieces. Bradley records the number of pieces each person eats in the table below.

Name	Gurleen	Max	Ta-Shanya	Stewart	Brianne	Adrian
Number of Pieces Eaten	3	2	2	3	3	1

How many pies are eaten in total? Express your answer as a fraction.

Show your work.

They eat _____ pies.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2006

20 The results of a survey show that 30% of the people surveyed read a newspaper regularly. Which of the following numbers is equivalent to 30%?

a 0.03

b 3.0

c $\frac{1}{3}$

d $\frac{3}{10}$ *

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2007

6 The weather report shows that there is an 80% chance of rain tomorrow. Which fraction represents this chance?

F $\frac{1}{2}$

G $\frac{3}{4}$

H $\frac{4}{5}$

J $\frac{5}{6}$

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2007

35 Some students were asked in a survey, "What is your favourite sport?" The graph below shows the results of the survey.

Favourite Sport

Favourite Sport	Number of Students
Hockey	☺ ☺ ◖
Basketball	☺ ☺ ☺
Volleyball	☺ ☺ ☺ ◖
Soccer	☺ ☺
Other Sports	☺ ◖

Key
☺ represents 4 students

What percent of the students chose hockey as their favourite sport?

A 2.5%

B 10%

C 20%

D 25%

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2007

8 A school needs to buy 2400 pencils. The prices for pencils at 3 stores are shown below.

- Store A sells 60 pencils for $1.80.
- Store B sells 30 pencils for $0.99.
- Store C sells 15 pencils for $0.55.

The school will purchase the pencils with the lowest price. Which store has the lowest price for 2400 pencils?

Explain your answer.

Store _____ has the lowest price for pencils.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2008

22 A package of 3 pairs of socks costs $3.90. What is the cost of one pair of socks?

a $1.30

b $1.90

c $6.90

d $11.70

23 A teacher plants 6 tulips and 9 roses in a planter. Which of the following represents the ratio of roses to tulips?

a $\frac{3}{2}$

b $\frac{2}{3}$

c $\frac{15}{9}$

d $\frac{9}{15}$

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2008

27 Josie, Christina, Audrey and Manny go shopping. Josie spends $\frac{4}{5}$ of her money, Christina spends 75% of her money, Audrey spends 0.68 of her money and Manny spends $\frac{17}{20}$ of his money.

Who has the largest percentage of their money left?

Justify your answer.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2009

22 Natasha is 12 years old. Her teacher is 36 years old. Which ratio represents Natasha's age in 4 years to her teacher's age in 4 years?

a 1:3

b 2:5

c 3:10

d 4:9

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2010

31 Amir's class has 24 students. There are 15 boys in the class. Which of the following represents the ratio of girls to boys?

a 24:9

b 9:24

c 5:3

d 3:5

34 Chris, Paul and Carla share the cost of renting a video game.

- Chris pays 0.4 of the cost.
- Paul pays 36% of the cost.
- Carla pays the remainder of the cost.

What fraction of the cost does Carla pay?

a $\frac{6}{25}$

b $\frac{9}{25}$

c $\frac{19}{25}$

d $\frac{24}{25}$

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2010

28 The rates for Internet use offered by three companies are shown below.

- Company A: $6.00 for every 90 minutes of use
- Company B: $2.75 for every 45 minutes of use
- Company C: $3.00 for every 60 minutes of use

Which company offers the lowest rate per minute?

Show your work.

Company _____ offers the lowest rate per minute.

GRADE SIX EQAO QUESTIONS: Number Sense and Numeration

Overall Expectation #3
Spring 2011

35 A recipe for a fruit drink uses 1 litre of cranberry juice, 2 litres of grape juice and 3 litres of orange juice.

Which of the following could be represented by the ratio 3:2?

a grape juice to orange juice

b orange juice to grape juice

c grape juice to cranberry juice

d cranberry juice to grape juice